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Urban Growth in the Kathmandu Valley: The Transformation of Public Space

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Abstract

Traditional towns of the Kathmandu Valley boast a fine provision of public spaces in their neighbourhoods. Historically, a hierarchy of public space has been distributed over the entire town with each neighbourhood centered around more or less spacious public squares. However, rapid growth of these towns over the past decades has resulted in haphazard development of new urban areas with little provision of public space. Recent studies indicate that the loss of public space is a major consequence of the uncontrolled urban growth of the Kathmandu Valley and its new neighbourhoods. This paper reviews the current urban growth of the Kathmandu Valley and its impact on the development of public space in new neighbourhoods. The preliminary analysis of the case study of three new neighbourhoods shows that the formation and utilization of neighbourhood public spaces exhibit fundamental differences from those found in the traditional city cores. The following key issues are identified in this paper:

- a) Governance and regulations have been a challenge to regulate rapid urban growth;*
- b) The current pattern of neighbourhood formation is found to be different from that of traditional neighbourhoods due to the changes with rapid urban development;*
- c) Public spaces have been compromised in both planned and unplanned new neighbourhoods in terms of their quantity and quality;*
- d) The changing provision of public space has contributed to its changing use and meaning; and*
- e) The changing demographic composition, changing society and life style have had direct impact on the declining use of public space.*

Moreover, the management of public spaces remains a big challenge due to their changing nature and the changing governance. The current transformation public space does not appear to be conducive, and has led to adversely changing social environment of the new neighbourhoods.

Key words: Urban growth; urban neighbourhood; public space; transformation; Kathmandu Valley.

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Introduction

Kathmandu Valley, the cultural, economical and political centre of Nepal has witnessed a rapid and significant growth of its towns over the past decades. Following the political change of 1951, it opened to migration from other parts of the country and exposure to globalization (Shah & Pant, 2005) with the development of physical and other infrastructures including the construction of major highways. As migration, which is an outcome of improved mobility, exerted considerable pressure on urban growth, the urban landscape began to transform dramatically since the 1960s with rapid expansion of city cores and the emergence of urban sprawl (ICIMOD, UNEP, & Government of Nepal, 2007; Thapa, Murayama, & Ale, 2008). In a relatively short span of time, the valley has now developed into the largest metropolitan region in the country with a population of over three million people (KMC/World Bank, 2001; Muzzini & Aparicio, 2013).

The current growth of the Kathmandu Valley is not only rapid but also uncontrolled, and has resulted in haphazard development of new urban areas (ICIMOD, et al., 2007). Several consequences of rapid urban growth can be observed, particularly, in the transformation of its towns from a compact traditional settlement to a modern suburban sprawl (KMC/World Bank, 2001). The transformation of urban structures is also evident in the development of new neighbourhoods and their public spaces. Recent studies indicate that the loss of public space in these neighbourhoods is a major consequence of valley's uncontrolled urban growth (Adhikari, 1998; KMC/World Bank, 2001; M. G. Pradhan, 2003; Shah & Pant, 2005; B. K. Shrestha, 2005; B. K. Shrestha & Shrestha, 2006; Tiwari, n.d.; Zurick & Rose, 2009). In this context, this paper presents an overview of the current urban growth of the Kathmandu Valley and its impact on the transforamtion of public space in contemporary urban neighbourhoods.

Kathmandu Valley: Urban Growth and Contemporary Urban Scenario

Geographical Setting

Kathmandu Valley lies in the central hill region of Nepal. Located between 27°32'13" and 27°49'10" North latitudes and 85°11'31" and 85°31'38" East longitudes, it is a bowl shaped geographical area surrounded by the *Mahabharata* mountain range on all sides (ICIMOD, et al., 2007). The valley has a surface area of 665 square kilometres, and lies at an average altitude of 1350 meters above mean sea level (Thapa & Murayama, 2012; Thapa, et al., 2008). It consists of three principal towns i.e. Kathmandu, Lalitpur and Bhaktapur, and other smaller towns including 97 surrounding Village Development Committees (VDC) (Figure 1).

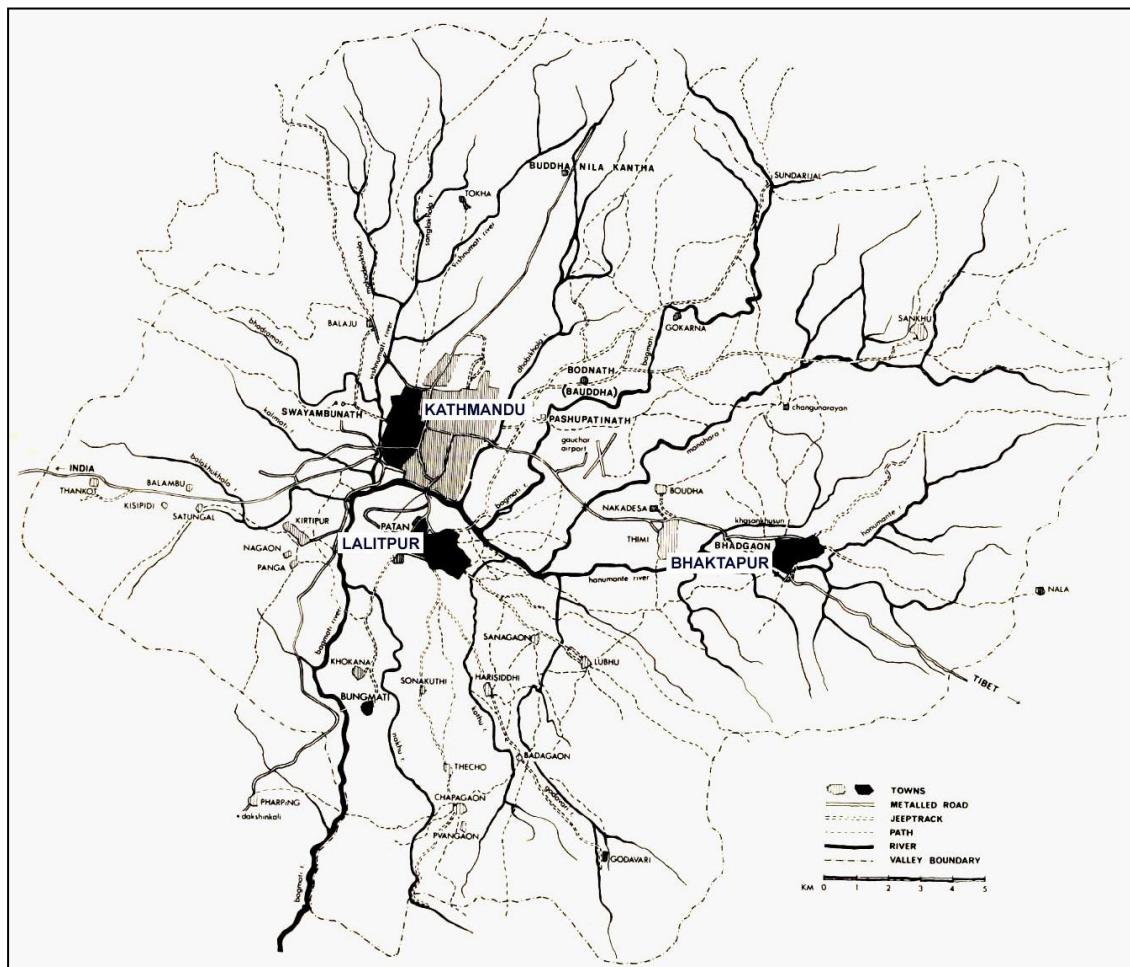


Figure 1. Map of the Kathmandu Valley showing three principal towns
Source: (Hosken, 1974)

Historical Development

Kathmandu Valley has a long history of development of human settlement which can be traced back to more than two millennia. Its ancient history begins with a mythological tale found in a Buddhist text called the *Swayambhu Purana* (Hutt, 1994). The *Purana* describes the valley as once a magnificent lake which was made habitable by *Bodhisatwa Manjushree* after draining the water from the gorge at Chobhar in the south-western part of Lalitpur city. Ancient legends also exist about dynasties such the *Gopals* and the *Kirats* living in the valley (Korn, 1977). However, without authentic reports, the existence of the valley in these periods is shrouded in legends and myths (Korn, 1977; C. B. Shrestha, Khatry, Sharma, & Ansari, 1986). Korn (1977, p. xvii) confirms that “it is only in the 5th and 6th centuries that the first authentic dates and facts appear through stone inscriptions and through Chinese travel reports, describing the Nepalese people living in the mountains, or describing the Kathmandu Valley then ruled by the *Lichchhavi* dynasty”. With the establishment of a strong, valley-based centralized state by the *Lichchhavis*, who ruled from 2nd to 9th century, Nepal entered the era of documented history (Hutt, 1994).

Following the *Lichchhavis*, the *Malla* kings ruled the Kathmandu Valley from 13th to 18th century and made significant contribution towards the development of its traditional towns. While the patronage of *Malla* rulers and the genius of local artisans combined to create a unique feature of medieval Nepal, with no doubt, it was the period of advancement in all forms of art including architecture and town planning. The glorious achievements made during the *Malla* period can still be traced in the city cores of its towns in the arrangement of buildings and monuments, streets and public open spaces.

The *Malla* rule came to an end in 1769 following the seizure of the Kathmandu Valley towns by Prithavi Narayan Shah following his campaign of unification of nation. This paved the way for the *Shah* Dynasty to be established as the ruler of greater Nepal. However, with the rise of Jungabhadur Rana as a Prime Minister (de facto ruler) of Nepal in 1845, the country witnessed the *Rana* rule for next one hundred and four years. But the political revolution of 1951 overthrew the *Rana* regime, and brought the *Shah* Kings back to the throne. Recently in 2008, the *Shah* Dynasty was put to an end by the second people’s movement declaring the nation a republic.

Factors Affecting Current Urban Growth

Kathmandu Valley is one of the fastest growing urban regions in South Asia with an annual growth rate of about 3.9 percent per year (Muzzini & Aparicio, 2013). While a number of factors are responsible for its current growth, the major one is the rise of population due to natural growth and migration. In the last 60 years, the urban population of valley increased fivefold from 197,000 in 1952 to 996,000 in 2001 and to 1.5 million in 2011, accounting for 32 percent of country’s urban population (Muzzini & Aparicio, 2013).

Migration appears to have contributed largely to the rise of population of the Kathmandu Valley as compared to the natural growth. In 2001, about 42 percent of population living in the valley was found to be migrants (Thapa, et al., 2008). The migrating population increased significantly in the last decade due to the nation’s ongoing conflict and political instability (ICIMOD, et al., 2007). Several other pull factors have also played a role in attracting a huge influx of population from all over the country. Basic services such as electricity, water supply and sanitation, telecommunication, education, road and transportation are better developed in the valley compared to rest of Nepal (ICIMOD, et al., 2007). In addition, better job opportunities occur here because most governmental, academic and financial institutions as well as health care facilities are located.

Apart from exerting pressure on urban growth, the growth of urban population in terms of migrating and transient population has implications in terms of creating an entirely new social environment. Current studies indicate that such a trend has led to a changing socio-economic character and increasing heterogeneity of population in new urban areas of the Kathmandu Valley with the rise of multiculturalism (R. Pradhan, 2007; Toffin, 2010).

Approaches to Regulate Urban Growth

Several institutional approaches were taken to regulate urban growth in the Kathmandu Valley since the 1960s. The government authorities drafted a number of policies, acts and regulations, and also prepared development concepts and plans aiming at planned urban development. However, these plans lacked effective implementation due to political and other reasons. In the 1970s, Kathmandu Valley Town Development Committee (KVTDC) and local municipalities introduced site specific growth management tools such as site and services, land pooling schemes and Guided Land Development (GLD) in different parts of the Kathmandu Valley. Unfortunately, these tools also achieved only partial success while most of the new developments took place spontaneously without any intervening measure from the state and thus, resulting in uncontrolled and haphazard growth. On the other hand, the current Bye-laws, drafted in 1992 and amended in 2007, has been inadequate to address the problems of urban growth, and has very little control over its processes and consequences.

Urban Change and the Contemporary Urban Scenario

Following the rapid urban growth, the Kathmandu Valley has significantly transformed over the past decades. This can be observed in both changing physical and social environment of the new urban areas. The current growth exhibits an unplanned development of urban sprawl in a sharp contrast with the traditional city cores. It resembles a radial growth, often referred to as an octopus growth, due to the expansion taking place in all directions from the city cores with the sprawling outer rings (Subba, 2003) (Figure 2).

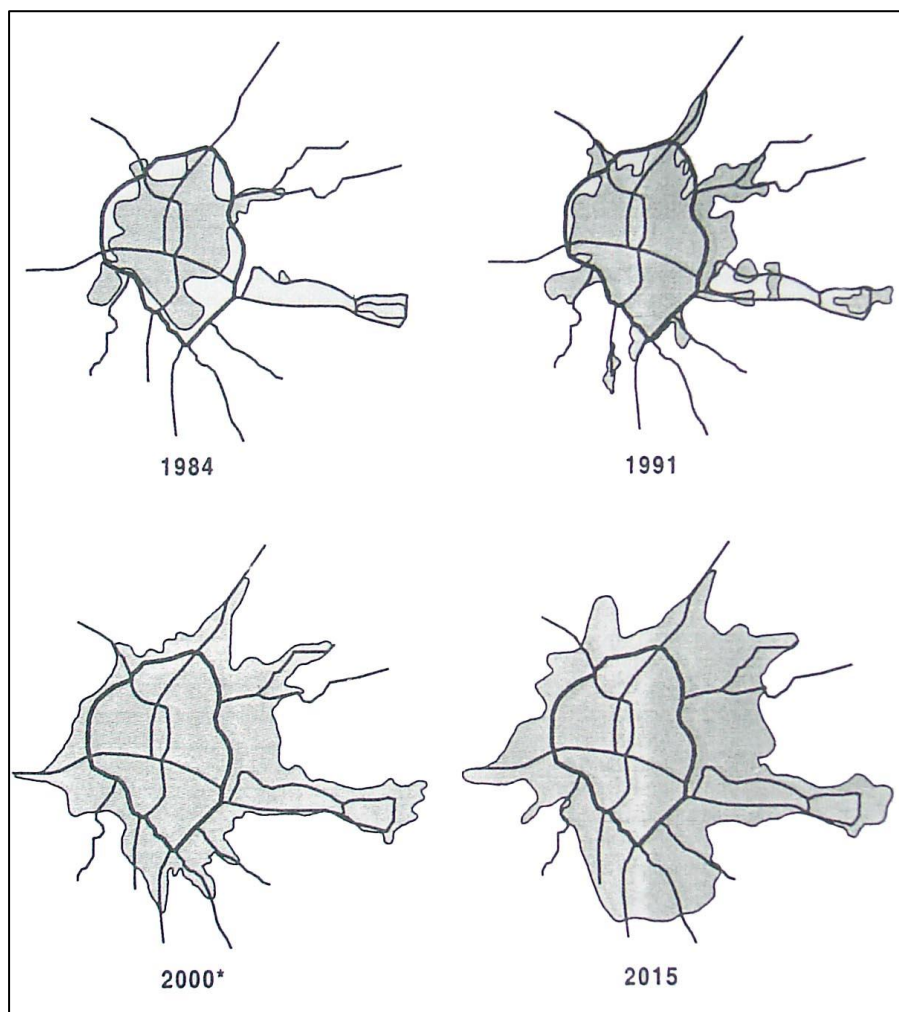


Figure 2. Urban growth in the Kathmandu Valley
Source: (KMC/World Bank, 2001)

Kathmandu Valley Environment Outlook (2007, p. 54) mentions “unplanned land subdivision” and “uncontrolled urban sprawl” as two major problems, among others, related to valley’s current urban growth. The formal approaches of urban land development have failed to address the problems of urban growth as land development has mostly been taking place in an informal manner. It “is largely carried out by private land brokers who subdivide and sell land into small single family parcels to maximize the total private value only, sacrificing common services as trade-off” (Adhikari, 1998, p. 6). In recent decades, the private sectors have also introduced commercial housing projects. However, such development does not form a significant part of urban growth. It is estimated that around 90 percent of houses are still built in informally following the traditional practice of owner-built housing development (B. K. Shrestha, 2010).

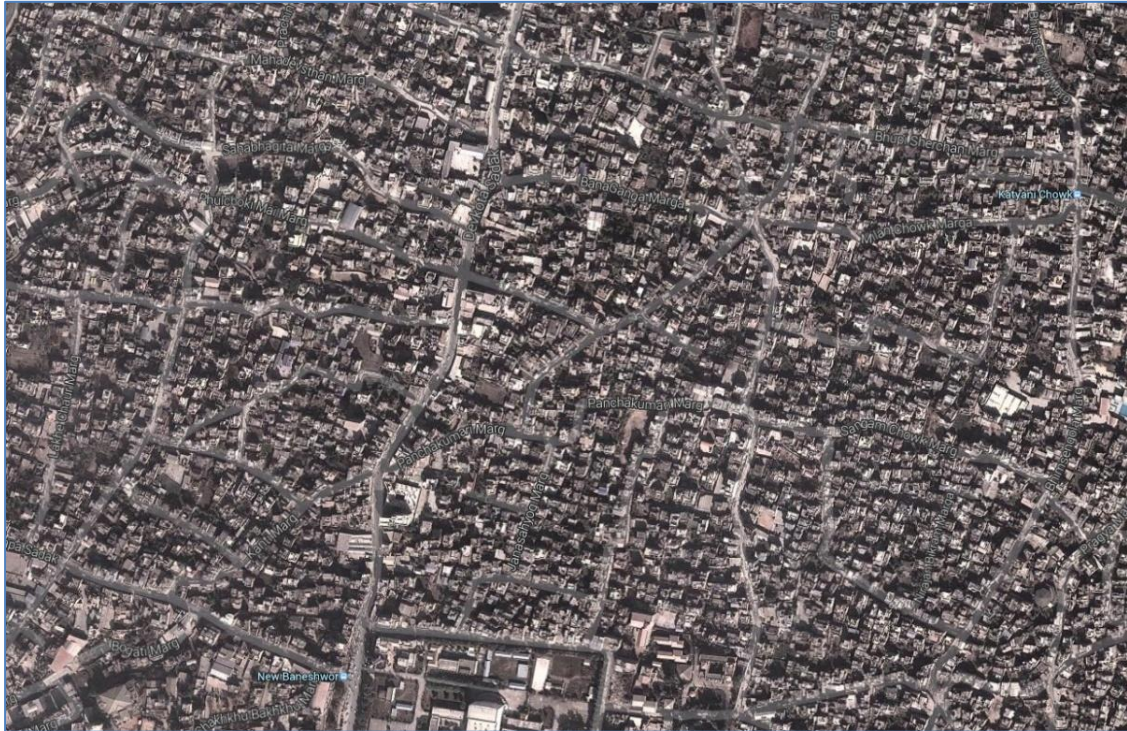


Figure 3. Urban form of New Baneshwor, a new urban area in the Kathmandu Valley
Source: Google Maps, 2014

Public Space in New Neighbourhoods

According to Pradhan (2003), Kathmandu Metropolitan City (the largest metropolitan area of the Kathmandu Valley) comprises of only 6 percent open space (compared to 10 to 20 percent in other metropolitan regions of the world) with per capita organized open space of 0.97 sq. m. (which is about 9.7 sq. m. in Delhi in India). While unplanned urban neighbourhoods have practically no open space (Adhikari, 1998), the public spaces in the planned neighbourhoods including the gated communities exhibit numerous problems. Shrestha (2005) observes that planning and design of open spaces in private housing developments are not satisfactory as their shape and location are inappropriate. There is an absence of basic amenities rendering them user unfriendly. Furthermore, the amount of open spaces ranges from 2.5 to 5 percent of total developed area which is far less than what is needed to fulfil the needs of the residents including different age groups.

Public space: Definitions, Dimensions and Significance

Definition of Public Space

Carr et al. (1992, p. xi) define public space as the “common ground where people carry out the functional and ritual activities that bind a community, whether in the normal routines of daily life or in periodic festivals”. Madanipour (1996, p. 148) defines it as a “space that allows all the people to have access to it and the activities within it, which is controlled by a public agency, and which is

provided and managed in the public interest”. These definitions suggest that public space is essentially a physical setting provided for a range of social and cultural activities.

Dimensions of Public Space

This paper is concerned with physical, social and psychological dimensions of public space which form the elements of evaluation for the transformation of public space (Figure 4). The physical dimension of public space refers to its provision which provides a setting for social interaction, whereas the social dimension refers to the use or activities occurring in the space (Carmona, Tiesdell, Heath, & Oc, 2010). The psychological dimension relates to the perception of public space, and may be expressed in terms of how people interpret the space and give meaning to it, and how such meaning help develop a sense of community.

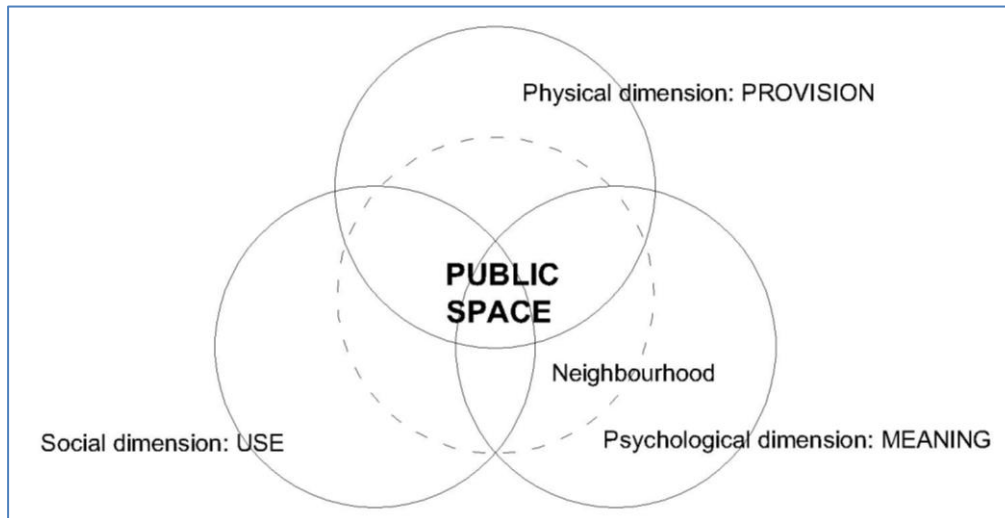


Figure 4. Dimensions of public space

Source: Authors

Studies have shown that there is a strong relationship between these dimensions of public space. The use of public space largely depends upon its physical qualities. Gehl (1987) suggests that physical design and the condition of public space can largely influence the pattern of use. Likewise, Whyte (1980) argues that most sociable spaces are the ones which are easily accessible to the users both physically and visually with plenty of amenities to support the activities occurring in it. There is also a strong association between the quality of public space and the sense of community (Francis, Giles-Corti, Wood, & Knuiman, 2012; Talen, 2000).

Significance of Neighbourhood Public Space, Its Use and Meaning

Public space plays a significant role in people's everyday life. Indeed, "public space is intertwined with everyday life in neighbourhoods" in such a way that it is directly related to the quality of social life (Madanipour, 2010, p. 107). It, thus, becomes a day-to-day space of a community (Gallacher, 2005). Jane Jacob in her pioneering work titled "The Death and Life of Great American Cities" (1961) has advocated the significance of neighbourhood public space, and emphasized its role in human activity and social interaction. Public space is a shared social space without which community cannot survive (Worpole & Knox, 2007).

In the mundane setting of urban neighbourhoods, different optional and social activities take place including passive contacts such as seeing and hearing and informal greetings (Gehl, 1987). In performing such activities, neighbourhood residents engage in social interaction. A key element of community is social interaction, and the use of public space has potential to create this (Abu-Ghazze, 1999). It is also one of the significant environmental factors associated with the creation of a sense of community. Thus, public spaces are not just physical settings but they also possess a host of subjective meanings that accumulate over time (Cattell, Dines, Gesler, & Curtis, 2008). Such

meanings are very often acquired through participation in the social spaces of neighbourhood. People give meaning to such spaces in their role in social interaction and integration (Peters, 2011).

Public Space in the Traditional Towns of the Kathmandu Valley

Urban spaces of the traditional towns of the Kathmandu Valley have been organized in a very unique and innovative way. These towns boast a fine provision of public spaces in their neighbourhoods, and exhibit “a distinct set of [urban] squares with a clear hierarchy of social [and] cultural activity” (Tiwari, 1989, p. 95). This includes a) the Durbar (palace) square; b) the Market square; c) the Residential Neighbourhood square; and d) the Private Residential square. Though this classification reflects a social hierarchy, there is also an underlying implication on the physical aspects of public space. The physical features such as location and accessibility, shape and size, degree of enclosure and the presence of urban elements greatly vary in each typology (Chitrakar, 2006).



Figure 5. A traditional market square in Bhaktapur city of the Kathmandu Valley
Source: (GTZ & UDLE, 1995)

Furthermore, the principle of organization of traditional open space is guided by a distribution of urban squares throughout the entire town (Chitrakar, 2006). These squares have been embedded in urban fabric in such a way that they appear in each neighbourhood in one or the other form. Likewise, the idea of conception of squares in relation to the streets makes them accessible with the spatial linkages made fluent and convenient.

Neighbourhood Public Space

Urban squares have been essential features of traditional urban neighbourhoods. Each neighbourhood is centered around more or less spacious public squares (Gutschow & Kolver, 1975). The amount of neighbourhood open spaces in traditional towns of the Kathmandu Valley averages about 12 percent of the total housing area (Adhikari, 1998). Different types of community buildings found in them add more space for social gathering. As already explained, they appear in several forms throughout the

town, and also consist of many elements of urban interest such as temples, *Pati* (public rest house), well and stone water spout, *Stupa* and *Chaitya* (Buddhist shrines), and *Dabali* (an elevated platform). Use of these elements serves both functional and visual purposes (Chitrakar, 2006), and also work as space defining elements with direct influence on the design and use of space. Moreover, these elements also contribute to a picturesque urban setting with a high degree of legibility and imageability (Chitrakar, 2006).

Traditionally, the *Newars* - the indigenous people of the Kathmandu Valley, lived in an extended family, and demonstrated considerable ease among neighbours and a communal life philosophy (Tiwari, 1989). Social networking and exchange have always been significant part of their life which has led to an extensive use of public spaces and buildings. With communities organized around a neighbourhood and its public spaces, an active participation in a public realm by the *Newar* people can be observed in everyday life as well as during festivals and religious occasions.

Transformation of Contemporary Public Space

Recent urban growth and change in the Kathmandu Valley have largely influenced the development of public spaces in its new neighbourhoods. To investigate this, three new urban neighbourhoods will be examined in detail as case studies. The preliminary analysis/observation of the case study neighbourhoods shows that the current pattern of neighbourhood formation is found to be different from that of traditional neighbourhoods due to the changes with rapid urban development. The formation and utilization of neighbourhood public spaces in new neighbourhoods exhibit fundamental differences from the traditional public spaces. Both the provision and use of new neighbourhood public spaces have been transformed. This transformation has, in turn, also changed the meaning of public space for neighbourhood residents. This paper identifies the following key issues on changes with the provision, use and meaning of public space in new neighbourhoods.

- a) Changes with the provision
 - Public spaces have been compromised in both planned and unplanned new neighbourhoods in terms of their quantity and quality.
 - Public spaces are developed as open “plots” without integrating them into the built mass.
 - There is a lack of design elements/features in public space to make them inviting and user friendly.
- b) Changes with the use
 - In absence of public spaces/buildings, local shops, cafes and other similar privately owned venues are being increasingly used for social gathering.
 - New social uses (such as morning walk and other leisure activities) are emerging to replace traditional culture and religion based activities.
 - Disappearance of element of urban interest makes new public spaces less usable.
 - Less occurrence of festivals and social events have led to less use of public space.
 - Less optional and social activities are taking place due to inappropriate provision of public space.
- c) Changes with the meaning
 - While people see the significance of public space, its improper provision and declining use does not contribute to developing a positive meaning.
 - People hardly develop a sense of community in new neighbourhoods.

Challenges of Current Transformation of Public Space

Governance and regulations have been a challenge to regulate rapid urban growth in the Kathmandu Valley. The regulatory bodies are unable to cope with the consequences of such growth resulting in the unplanned development and transformation of urban structures including neighbourhood public spaces. The loss of public space in new neighbourhoods is hindering the quality of urban life and social well-being. People are deprived of places where they can meet and interact with neighbours.

Children do not find places to play. The level of social interaction has reduced dramatically, and a sense of community is deteriorating. If public spaces are properly developed, it can increase the level of socialization by combining necessary, optional and social activities in a common platform (Gehl, 1987). As the development of public spaces is not satisfactory in both planned and unplanned new neighbourhoods, this platform is very much missing. On the other hand, the changing demographic composition, changing society and a new life style have had direct impact on the declining use of public space. All these factors indicate that social sustainability may emerge as a major challenge of current urban growth in the long run.

The management of public spaces also remains a big challenge due to the changing governance. This is reflected in their unsatisfactory provision and utilization. In neighbourhoods with no public spaces, the challenge remains to identify alternative places where people could meet and socialize. It is worth noting that with the emergence of third space, a new type of commercial spaces/buildings is evolving. In other neighbourhoods, the existing public spaces have been underutilized or put into the wrong use. The local community groups/organizations are still active but in the new forms, and found ineffective in management of such spaces.

Conclusion

The uncontrolled and haphazard urban growth of the Kathmandu Valley over the past decades has led to the rapid transformation of its urban structures including the public spaces in new urban neighbourhoods. The contemporary public spaces appear to be remarkably different from their traditional counterpart as their provision and use are changing acquiring a different meaning. Most notably, there is a severe loss of public space which is also hindering the process of social interaction and integration. It is, thus, evident that the current transformation does not appear to be conducive, and has led to adversely changing social environment of the new neighbourhoods.

References

- Abu-Ghazze, T. M. (1999). Housing layout, Social Interaction and Place of Contact in Abu-Nuseir, Jordan. *Journal of Environmental Psychology*, 19(1), 41-73.
- Adhikari, A. P. (1998). *Urban and Environmental Planning in Nepal - Analysis, Policies and Proposals*. Kathmandu: The World Conservation Union (IUCN)
- Carmona, M., Tiesdell, S., Heath, T., & Oc, T. (2010). *Public Places – Urban Spaces: The Dimensions of Urban Design* (Second ed.). London: Architectural Press.
- Carr, S., Francis, M., Rivlin, L. G., & Stone, A. M. (1992). *Public Space*. Cambridge: Cambridge University Press.
- Cattell, V., Dines, N., Gesler, W., & Curtis, S. (2008). Mingling, observing, and lingering: Everyday public spaces and their implications for well-being and social relations. *Health & Place*, 14(3), 544-561.
- Chitrakar, R. M. (2006). *A study of historic urban squares of Kathmandu Valley*. MUD Dissertation, The University of Hong Kong, Hong Kong.
- Francis, J., Giles-Corti, B., Wood, L., & Knuiman, M. (2012). Creating sense of community: The role of public space. *Journal of Environmental Psychology*, 32(4), 401-409.
- Gallacher, P. (2005). *Everyday spaces: The potential of neighbourhood space*. London: Thomas Telford.
- Gehl, J. (1987). *Life between buildings : Using public space* (J. Koch, Trans.). New York: Van Nostrand Reinhold.
- GTZ, & UDLE. (1995). *Images of a century: The changing townscapes of the Kathmandu Valley*. Kathmandu.
- Gutschow, N., & Kolver, B. (1975). *Ordered Space Concepts and Functions in a Town of Nepal: Bhaktapur*. Baden: Kommissions-Verlag Franz Steiner.
- Hosken, F. P. (1974). *The Kathmandu Valley Towns: A record of Life and Change in Nepal*. New York: Weatherhill.
- Hutt, M. (1994). *Nepal: A Guide to the Art and Architecture of the Kathmandu Valley*. Gartmore: Kiscadale Publications.

- ICIMOD, UNEP, & Government of Nepal. (2007). *Kathmandu Valley Environment Outlook*. Kathmandu: ICIMOD.
- Jacobs, J. (1961). *The Death and Life of Great American Cities*. New York: Random House.
- KMC/World Bank. (2001). *City Development Strategy and City Assistance Program*. Kathmandu: Kathmandu Metropolitan City/World Bank.
- Korn, W. (1977). *The Traditional Architecture of Kathmandu Valley*. Kathmandu: Ratna Pustak Bhandar.
- Madanipour, A. (1996). *Design of urban space : An inquiry into a socio-spatial process*. Chichester: John Wiley.
- Madanipour, A. (Ed.). (2010). *Whose public space? : International case studies in urban design and development*. Abingdon, Oxon; New York: Routledge.
- Muzzini, E., & Aparicio, G. (2013). *Urban Growth and Spatial Transition in Nepal: An Initial Assessment*. World Bank Publications.
- Peters, K. (2011). *Living together in multi-ethnic neighbourhoods : the meaning of public spaces for issues of social integration*. The Netherlands: Wageningen Academic.
- Pradhan, M. G. (2003). Urban Open Spaces in Kathmandu – Problems and Prospects. *Vaastu*, 5, 45-46.
- Pradhan, R. (2007). *Negotiating Multiculturalism in Nepal: Law, Hegemony, Contestation and Paradox*. Paper presented at the Conference on Constitutionalism and Diversity, Kathmandu, Nepal.
- Shah, B., & Pant, D. (2005). *Transformation of Urban Structures in the Kathmandu Valley*. Paper presented at the International Conference for Integrating Urban Knowledge & Practice Gothenburg, Sweden.
- Shrestha, B. K. (2005). How Not To Design A Neighborhood – Reviewing Different Residential Precincts of Kathmandu. *Scitech Nepal*, 8(2), 46-69.
- Shrestha, B. K. (2010). Housing provision in the Kathmandu Valley: Public agency and private sector initiation. [Article]. *Urbani Izziv*, 21(2), 85-95.
- Shrestha, B. K., & Shrestha, S. (2006). To Whom It May Concern – Privatization of Public Spaces: A Case of Dharahara – Sundhara Square, Kathmandu. *Scitech Nepal*, 9(2), 3-22.
- Shrestha, C. B., Khatry, P. K., Sharma, B., & Ansari, H. (1986). *The Historic Cities of Asia: Kathmandu*. Kathmandu: Center for Nepal and Asian Studies, Tribhuvan University.
- Subba, M. (2003). *Urban Containment Policy: Does it present a hope to manage an impending urban crisis of the Kathmandu Valley?* Dr.ing Thesis, Norwegian University of Science and Technology, Trondheim.
- Talen, E. (2000). Measuring the public realm: A preliminary assessment of the link between public space and sense of community. *Journal of Architectural and Planning Research*, 17(4), 344-360.
- Thapa, R. B., & Murayama, Y. (2012). Scenario based urban growth allocation in Kathmandu Valley, Nepal. *Landscape and Urban Planning*, 105(1-2), 140-148.
- Thapa, R. B., Murayama, Y., & Ale, S. (2008). Kathmandu. *Cities*, 25(1), 45-57.
- Tiwari, S. R. (1989). *Tiered Temples of Nepal*. Kathmandu: Sunita Tiwari.
- Tiwari, S. R. (n.d.). City space and life then, 150 years ago - A presentation of concept and realities Retrieved April 26, 2012, from <http://www.kailashkut.com/pagepublications/cityspaceandlife.pdf>
- Toffin, G. (2010). Urban fringes: Squatter and slum settlements in the Kathmandu Valley (Nepal). *Contributions to Nepalese studies*, 37(2), 151-168.
- Whyte, W. H. (1980). *The social life of small urban spaces*. Washington DC: Conservation Foundation.
- Worpole, K., & Knox, K. (2007). *The Social Value of Public Spaces*. London: Joseph Rowntree Foundation.
- Zurick, D., & Rose, A. (2009). Landscape Change in Kathmandu Valley, Nepal. *Focus On Geography*, 51(4), 7-16,37.